

SURVEY OF MEDICINAL PLANTS CURRENTLY USED BY HERBALISTS IN LEBANON

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Abstract

Lebanon encompasses a relatively large flora of 2,607 species. Several species in this rich flora were reported to have medicinal applications for various diseases. However, there have been few studies on the use of medicinal plants in Lebanon. In an attempt to study the Lebanese ethnopharmacological status, a survey on medicinal plants used by herbalists in Lebanon was conducted. Based on data collected from 26 local herbalists, the study revealed that 128 plant species are used for treating various diseases, in the following way: 51 species for treating gastrointestinal disorders; 32 for kidney and urinary diseases; 37 for blood and cardiovascular diseases; 19 for disorders of the nervous system; 21 for diabetes; 19 for respiratory illnesses including 4 for asthma; 18 for sexual disorders; 17 for hair problems; 7 for liver diseases, 6 for tumors, and several other plant species for other diseases. The survey also showed that most interviewed herbalists did not hold a high school certificate and they were not licensed for this practice. Hence, there is a need to properly train the herbalists in plant taxonomy and disease diagnosis, and to implement proper herb collection and storage.

Introduction

Nowadays, folk medicine is recognized throughout the world as a credible healthcare resource and about 80% of the world's population depends on traditional medicine for the treatment of different ailments (Shinwari and Qaisar, 2011). The World Health Organization (WHO) considers that traditional medicine is an important contributor to its health goals and has been encouraging its development through testing herbs' toxicities and improving methods of herb collection, drying and conservation (Anon., 1991; Shinwari *et al.*, 2012).

In the Middle East, a growing interest in medicinal plants has been noted. Several ethnopharmacological surveys on the medicinal herbs used in the region, mainly in Jordan and Israel, have been conducted (Said *et al.*, 2002; Lev and Amar, 2002; Abu-Irmaileh and Afifi, 2003). They showed that more than 100 plant species are used in herbal medicine and that there is still a flourishing and big demand on traditional drugs, namely of plant origin (Said *et al.*, 2002; Lev and Amar, 2002). However, such extensive ethnopharmacological studies have not been conducted in Lebanon, which has the richest flora in the Middle East.

Lebanon is endowed with a very large flora consisting of 783 genera and 2,607 species, out of which 78 are endemic (Post, 1932; Nehme, 1978). Its geographical location, eastern to the Mediterranean Sea, has contributed to a varied topography with different elevations, a diversity of soil types, and a variety of climatic zones and microclimates ranging from dry and hot to temperate and humid (Abi Saleh and Safi, 1990; Post, 1932). All of these factors resulted in a relatively small geographical area with a very diverse flora adapted to several habitats.

At the "meeting point of three continents" (Post, 1932), Lebanon has had an important role in the Middle East as a trade center, and as a result obtained good knowledge and experience in herbal medicine. Old Lebanese generations relied heavily on herbal medicine,

and herbs such as sage, thyme, rosemary, lavender, mint and chamomile, were commonly grown in gardens (Malychef, 1989). Recently, Abou Chaar (2004) listed the use of 138 plants commonly used in herbal medicine in Lebanon. However, there is little information about what medicinal plants are still used by Lebanese herbalists who are decreasing in number, and there are no data on the competence of the practitioners. In order to preserve this heritage of plant usage in Lebanon, it is essential to start by conducting a wide and regional ethnobotanical survey.

The aims of this study are to survey the currently used plants by herbalists in Lebanon and record their medicinal usage and mode of preparation, and to assess the level of experience of the Lebanese herbalists.

Methodology

An ethnopharmacological survey was conducted from 2003-2005 by interviewing 26 local and popular herbalists from the 5 different provinces of Lebanon: 9 from the Bekaa Valley, 6 from Great Beirut, 4 from North Lebanon, 4 from Mount Lebanon, and 3 from South Lebanon. The methodology followed was based on a study done by Said *et al.*, (2002) and Nadeem *et al.* (2013) with some modifications. The herbalists were selected because they were recognized by their local community as being professional herbalists and full-time practitioners, and because of their experience in this field (minimum 11 years of experience).

A questionnaire was developed to investigate what types of medicinal plants were currently used by the practitioners in Lebanon for the treatment of various diseases. It included detailed information regarding the nature, source, identity of the herbs as well as their therapeutic usages, part(s) used, and mode of preparation. In case, the herbs were collected locally, detailed information was gathered on the collection procedure, location and abundance of the herb in the field. The questionnaire also covered information on the herbalist

himself, such as the socio-economic situation of his community, personal education, source of his knowledge, years of experience in this field, willingness to be associated with a local union, witnessing of exceptional cases of profound healings, and willingness to cooperate with Non-Governmental Organizations (NGOs) for herb conservation.

Every herbalist was asked to list the main diseases he treated and the plants used in the treatment. He was also asked to provide samples of the plant species from his own collection as well as from the field; and if possible plant photographs. Similar to Said *et al.*, (2002) and Gul *et al.* (2012), we considered the medicinal usage of a plant valid only if it was mentioned by at least three herbalists who confirmed that the plant extract was prescribed frequently. The identity of each plant species mentioned by the interviewed herbalists was then determined using references by Post (1932), Bedevian (1936), Edgecombe (1970), Nehme (1978), Hourí and Hourí (2001), and Tohme (2002), and by comparison with specimens at the Post Herbarium (BEI), American University of Beirut (AUB). Voucher specimens of plant samples provided by the herbalists are stored in the Post Herbarium (AUB).

Results and Discussion

The types of plants used by herbalists in Lebanon together with the parts used, medicinal applications, and mode of preparation are listed in Table 1. The survey showed that 128 plant species belonging to 119 genera were used by herbalists in Lebanon to treat various diseases, and are distributed as follows: 51 species are used for the treatment of gastrointestinal disorders; 32 for kidney and urinary diseases; 37 for blood and cardiovascular diseases; 19 for disorders of the nervous system; 21 for diabetes; 18 for sexual disorders; 17 for hair problems; 15 for respiratory problems (excluding asthma); 11 for arthritis, joint and back pain; 12 for allergies including 4 for asthma; 7 for liver diseases, 6 for cancer, 6 species for hemorrhoids, and few others for miscellaneous conditions. A few plants were shown to have specific and particular applications, such as *Myrtus communis* L. for the skin disease, intertigo; *Cucurbita moschata* Duch. for intestinal worms; *Eruca sativa* Mill. to stop smoking; *Petroselinum sativum* Hoffm. for milk production; and *Lupinus termis* L. for acne treatment (Table 1).

Most of the plants were used to treat more than one medical condition and specificity of each treatment depended on what part of the plant was used and on the mode of preparation. According to the survey, local herbalists administered remedies in the form of water infusion when the plant material was fresh and tender, and water decoction when the plant parts were dried and hard. Water infusions were prepared by soaking the plant material in boiling water for 1 minute and then leaving the solution to cool down. Water decoctions were done by soaking the dried plant material in boiling water for 15 minutes. Standard infusions and decoctions were always prepared by adding 15g of plant material to 200 ml of water. Other preparations such as fresh

juices, fresh fruits, salads, macerated plant parts, oil, milky sap, and inhalation of essential oils were used to a lesser extent. The survey also indicated that the remedies were mainly administered orally and very rarely as external application, water bath, rectal syringes or nasal delivery. These methods are similar to those followed by Arabic herbalists in Israel, the Golan Heights and the West Bank (Said *et al.*, 2002) and in part of Pakistan (Sarwat *et al.* 2012).

The number of plant species used by herbalists in Lebanon is close to what was reported by Abou Chaar (2004), who listed 138 plant species used in traditional folk medicine to treat 54 diseases. Moreover, most of the plants used by the Lebanese herbalists had similar applications as those reported in the literature (Said *et al.*, 2002; Abou-Irmaileh and Afifi., 2003; Abou Chaar, 2004).

The current survey showed that the average age of the 26 surveyed herbalists from the 5 different provinces in Lebanon was 49 years (35-76) and that their average years of experience was 24 (11-43) (Table 2). The youngest interviewed herbalists in terms of age and experience were in the Bekaa Valley while the oldest and more experienced ones were in South Lebanon. Four of the 26 interviewed herbalists also claimed to cure psychological factors such as hysteria. With respect to the herbalists' education, the survey shows that very few herbalists (12%) completed high school education (Fig. 1). Although they all claimed to be professional herbalists, none had any scientific training or an appropriate background to discuss medical terminologies and diagnosis. The descriptions of the various diseases were most of the time unclear and non-specific. For instance, herbalists claimed that certain herbs are used to treat the nerves, and when asked for further information, they provided vague answers. Moreover, the older and more experienced herbalists from the South were reluctant to give details about their remedies in an attempt to keep them in the family. In fact, the training and experience of the interviewed Lebanese herbalists were acquired from a family inherited business and from their own related readings of Arabic books about herbal medicine. Because most of the references used by the herbalists are old, mostly dating back to the 19th century (Alantaki, 1877) or new but without a reliable plant nomenclature, mistakes in plant identification may happen, especially that common names of plants do differ with time and regions. Hence, it appears that the scientific background of the herbalists is not enough for making accurate diagnosis and prescribing proper herbal cures. Similarly, Abu-Irmaileh and Afifi (2003) reported that most of the herbalists in Jordan were not educated and not licensed for practicing herbal medicine.

Recently, modern herbal shops opened in the major cities and are advertising in the media. They are becoming popular and seem to rely on imported herbs as implied by some of their advertisements. These shops are taking over the traditional herbalists. The owner of one chain of modern herbal shops was approached, but refused to be interviewed for this study.

Table 1. List of plants used by the Lebanese herbalists and their medical uses.

Family	Scientific name	Local Arabic name	Plant part used	Medicinal application	Mode of preparation
Alliaceae (MH1) ^a	<i>Allium cepa</i> L. ^{c,e}	بصل	Bulbs + leaves	Sexual weakness; anti-coagulant; cough	Juice prepared from bulbs and 1 spoon taken/day. Fresh leaves consumed
Alliaceae (MH2)	<i>Allium sativum</i> L. ^{c,e}	ثوم	Bulbs	Anti-microbial; flatulence; inflammations; arthritis	5 bulbs macerated with 1 cooked potato tuber, taken orally, once a day. For arthritis, juice from bulbs applied externally once a day
Amaryllidaceae (MH3)	<i>Narcissus tazetta</i> L.	نرجس الحقل	Bulbs + leaves	Callus	Plant parts soaked with olive oil for 1 week then extract applied over callus. Leaves used as gauze at the site of interest
Amaryllidaceae	<i>Narcissus tazetta</i> L.	نرجس الحقل	Flowers	Skin wrinkles	Flowers soaked with olive oil for 1 week then extract applied at site of interest
Amaryllidaceae	<i>Narcissus tazetta</i> L.	نرجس الحقل	Leaves, shoots + flowers	Laxative; depression	Standard infusion taken orally, 150 ml, 3-4 times/day
Anacardiaceae (MH4)	<i>Rhus coriaria</i> L. ^e	سماق	Fruits	Intestinal disinfectant; diarrhea	3 spoons taken orally once a day
Apiaceae (MH5)	<i>Angelica archangelica</i> L. ^f	خشيشة الملائكة	Flowers + leaves	Tranquilizer	Standard infusion taken orally, 150 ml, 3-4 times/day
Apiaceae (MH6)	<i>Ammi visnaga</i> (L.) Lam. ^e	خلخلة	Seeds	Diabetes; laxative; kidney stones; diuretic	Decoction of 2 teaspoons dried seeds in water (200 ml) for 5 min then filtered using sheath cloth; 1 teaspoon of olive oil then whole filtrate taken orally with 1 l of water. Done once for kidney stones. 150 ml of standard infusion taken orally, twice/day, for other applications
Apiaceae (MH7)	<i>Anethum graveolens</i> L. ^{c,d}	شبيبطة	Leaves	Lithiasis	Standard infusion taken orally, 150 ml, 3-4 times/day
Apiaceae (MH8)	<i>Apium graveolens</i> L. ^{d,e}	كرفس بري	Leaves + roots	Sexual weakness; male infertility	Eaten fresh as salad
Apiaceae	<i>Apium graveolens</i> L.	كرفس بري	Whole plant	Proteinuria	Juice prepared from the plant without roots taken orally, one cup, twice a day
Apiaceae	<i>Apium graveolens</i> L.	كرفس بري	Seeds	Joint pain	Ground seeds taken orally, 1 spoon, 2 times/day
Apiaceae (MH9)	<i>Coriandrum sativum</i> L. ^{c,d}	كزبرة	Leaves + seeds	Hair loss; Skin wrinkles	Standard infusion taken orally, 150 ml, 2-3 times/day; oil from seeds applied externally
Apiaceae (MH10)	<i>Crithmum maritimum</i> L.	شومر بحري	Leaves	Iodine deficiency; hair loss; regulation of adrenal gland secretions	1 spoon of dried, ground leaves taken orally once a day
Apiaceae	<i>Crithmum maritimum</i> L.	شومر بحري	Seeds	Colitis; cholesterol reduction	Decoction of 30 g dried seeds in 1 l of water for 15 sec; 150 ml taken orally 3 times/day
Apiaceae (MH11)	<i>Cuminum cyminum</i> L. ^c	كمون	Seeds	Laxative; flatulence	Standard decoction; 150 ml taken orally once/day
Apiaceae (MH12)	<i>Daucus carota</i> L. var. <i>sativa</i> DC. ^d	جزر	Roots	Cancer; platelets deficiency; visual disorders	Juice extracted from the tubers taken orally, 150 ml, once a day

Table 1. (Cont'd.).

Family	Scientific name	Local Arabic name	Plant part used	Medicinal application	Mode of preparation
Apiaceae (MH13)	<i>Eryngium maritimum</i> L. ^{d,e}	قرصنة	Shoots + leaves	Diabetes; diuretic	Decoction of 50g of seeds in 1 l of water; 150 ml taken orally 3 times/day
Apiaceae (MH14)	<i>Ferula hermonis</i> Boiss. ^{b,d,e}	زروع	Roots	Low blood pressure; dilation of blood vessels; sexual weakness; increasing testosterone release	200 g of fresh roots sliced and immersed in 1 l of water for 12 hours until milky; 5 drops taken once a day
Apiaceae (MH15)	<i>Foeniculum vulgare</i> Mill. var. <i>dulce</i> (Miller) Thell. ^e	شومر	Seeds	Laxative; diuretic; intestinal pains	Decoction of 30g of dried seeds in 1 l of water; 150 ml taken orally, 3 times daily
Apiaceae (MH16)	<i>Petroselinum crispum</i> (Mill.) Nym. ^{c,e}	بقدونس	Leaves + shoots	Milk production; kidney stones	Standard infusion taken orally, 150 ml, 2 times/day
Apiaceae (MH17)	<i>Pimpinella anisum</i> L. ^c	يانسون	Seeds	Diuretic; flatulence; stomach ache; asthma; nerve relaxant	Standard infusion taken orally, 150 ml, 3-4 times/day
Araceae (MH18)	<i>Arum palaestinum</i> Boiss. ^b	لوف	Leaves + stems	Stomach diseases; slimming	200g plant parts boiled in 1 l of water for 15 min, filtered, then remaining taken orally; seeds considered poisonous
Asparagaceae (MH19)	<i>Asparagus acutifolius</i> L. ^d	هليون	Leaves + shoots	Diuretic	Standard infusion taken orally, 150 ml, 3-4 times/day
Asparagaceae (MH20)	<i>Ruscus aculeatus</i> L. ^e	صوم النيك	Shoots, flowers + leaves	Renal lithiasis; urinary tract; diuretic.	Infusion of one full hand of plant parts in a cup of water; taken orally once a day
Asphodelaceae (MH21)	<i>Aloe vera</i> L. ^{c,d}	صبر	Leaves	Bone injury	Macerated leaves placed as warm compresses on affected area for 15 min
Asphodelaceae	<i>Aloe vera</i> L.	صبر	Fruits + leaves	Diabetes	Standard infusion taken orally, 150 ml, 3-4 times/day
Asteraceae (MH22)	<i>Achillea fragrantissima</i> (Forssk.) Sch.Bip. ^{b,e}	قيصرم جبلي	Shoots + flowers	Diabetes; inflammations; stomach ache	Decoction of 30g of seeds in 1 l of water taken orally, 150 ml, 3 times daily
Asteraceae (MH23)	<i>Achillea millefolium</i> L.	أخيليا ذات الف ورقة	Flowers	Cholesterol; stomach and intestinal pains; ulcers	Standard infusion taken orally, 150 ml, 3-4 times/day.
Asteraceae (MH24)	<i>Artemisia herba-alba</i> Asso. ^e	شبح	Seeds + flowers	Kidney stones; diuretic; diabetes; back pains	Standard infusion taken orally, 150 ml, 3-4 times a day
Asteraceae (MH25)	<i>Carduus argentatus</i> L. ^b	خرفيش	Seeds	Liver infection	1 spoon of ground seeds taken orally once a day
Asteraceae (MH26)	<i>Centaurea cyanoides</i> Berger. ^{b,d}	قطريون	Whole plant	Diabetes; blood pressure; wounds healing	Standard infusion taken orally, 150 ml, 3-4 times/day
Asteraceae (MH27)	<i>Chrysanthemum coronarium</i> L. ^d	أقوان	Flowers	Allergy; migraine	Standard infusion taken orally, 150 ml, 3-4 times/day.
Asteraceae (MH28)	<i>Cynara scolymus</i> L. ^{c,e}	أرضي شوكي	Leaves	Liver disease; regulation of cholesterol and triglycerides	One spoon of dried ground leaves taken orally once a day

Table 1. (Cont'd.).

Family	Scientific name	Local Arabic name	Plant part used	Medicinal application	Mode of preparation
Asteraceae (MH29)	<i>Inula viscosa</i> (L.) Ait. ^{d,e}	طوبون	Leaves	Wounds; bleeding; anti-inflammatory; nervousness	Leaves macerated and applied externally on skin
Asteraceae (MH30)	<i>Lactuca sativa</i> L. ^e	خس	Seeds	Diuretic; nervous relaxant; sexual relaxant; insomnia	Standard infusion taken orally, 150 ml, twice a day; half a spoon of ground seeds taken orally once a day at evening
Asteraceae (MH31)	<i>Matricaria chamomilla</i> L. ^d	بانوجنج	Flowers, shoots + leaves	Relaxant; headache; uterine cramp; hair dye; hoarseness; insomnia	Standard infusion taken orally, 150 ml, 3-4 times/day
Asteraceae (MH32)	<i>Senecio vulgaris</i> L. ^d	مريرة	Leaves + shoots	Kidney stones	Standard infusion taken orally, 150 ml, 3-4 times/day
Asteraceae (MH33)	<i>Silybum marianum</i> (L.) Gaertn. ^{d,e}	خرقيش الجمل	Leaves + roots	Liver; diabetes	Fried leaves and roots taken orally or one full hand eaten fresh
Asteraceae (MH34)	<i>Taraxacum officinale</i> Web. ^d	علت طر خشقون	Leaves	Iron deficiency	Eaten fresh with salad
Asteraceae (MH35)	<i>Tragopogon buphtalmoides</i> (DC.) Boiss.	لحية التيس	Leaves	Urinary bladder spasm	Standard infusion taken orally, 150 ml, 3-4 times a day
Asteraceae	<i>Tragopogon buphtalmoides</i> (DC.) Boiss.	لحية التيس	Whole plant	Laxative	Standard decoction applied as enema
Asteraceae (MH36)	<i>Tussilago farfara</i> L. ^d	خشيبة السعال	Flowers + leaves	Cough; internal hemorrhoids	Standard infusion taken orally, 150 ml, 3-4 times in a day
Berberidaceae (MH37)	<i>Berberis libanotica</i> Ehrenb. ^{b,d,e}	بربريس	Roots + stems	Anti-inflammatory; diuretic; laxative	Standard Infusion taken orally, 150 ml, 3-4 times a day
Borraginaceae (MH38)	<i>Borago officinalis</i> L. ^d	لسان الثور	Leaves	Cough; expectorant for smokers influenza; adrenal gland secretions	Decoction of 1 plant in 1 l of water for 1 min, 150 ml taken orally, twice a day
Brassicaceae (MH39)	<i>Brassica rapa sylvestris</i> (L.) Janc. ^{c,d}	لفت	Fruits	Vitamin A deficiency; sexual weakness	One fruit eaten fresh once a day
Brassicaceae (MH40)	<i>Brassica oleracea</i> L. var. <i>botrytis</i> L. ^e	قرنبيط أخضر	Leaves + fruits	Stomach ache; worms	Boiled in hot water for 5-10 min then eaten; 150 ml of standard infusion taken orally, 3-4 times/day
Brassicaceae (MH41)	<i>Brassica oleracea</i> L. var. <i>capitata</i> L. ^c	ملقوف	Leaves	Cardiovascular diseases; diabetes; cancer; hair loss; cholesterol	10 fresh leaves taken orally; 1 spoon of juice from the leaves taken orally, 3 times a day
Brassicaceae (MH42)	<i>Eruca sativa</i> Mill.	جرير	Leaves	Hair dye; sexual weakness; stopping of smoking	Juice from leaves applied externally on the hair; standard infusion taken orally, 150ml, once a day; or leaves eaten fresh for sexual weakness; 1spoon of leaf juice taken orally to stop smoking
Brassicaceae (MH43)	<i>Raphanus sativus</i> L. ^c	فجل	Seeds	Sexual weakness; skin wrinkles	1 spoon of seeds taken orally; oil extracted from seeds applied externally
Brassicaceae	<i>Raphanus sativus</i> L.	فجل	Leaves + bulbs	Kidney; jaundice	Eaten fresh as salad

Table 1. (Cont'd.).

Family	Scientific name	Local Arabic name	Plant part used	Medicinal application	Mode of preparation
Capparidaceae (MH44)	<i>Capparis spinosa</i> L. ^{b,d,e}	قنبر	Roots	Back pains	200 g of ground roots mixed with 100 g of sugar then olive oil added until dough consistency; mixture applied externally as a gauze at affected site
Chenopodiaceae (MH45)	<i>Beta vulgaris</i> L. var. <i>cicla</i> L. ^e	سلق	Leaves + shoots	Laxative; tumors; nervousness	Juice from the plant parts prepared, and taken orally 3 spoons a day
Clusiaceae (MH46)	<i>Hypericum perforatum</i> L. ^{d,e}	حلاوة	Leaves + shoots	Lithiasis; cough	150 ml of standard infusion taken 3-4 times/day
Cucurbitaceae (MH47)	<i>Cucurbita moschata</i> Duch. ^e	يقطين	Fruits	Diabetes; stomach ache	Juice from fruits prepared then taken orally 1 spoon twice a day
Cucurbitaceae (MH48)	<i>Cucurbita moschata</i> Duch. <i>Cucurbita pepo</i> L. ^{c,e}	يقطين كوسى	Seeds Fruits	Worms Lung inflammation	Take orally 200 g of fresh seeds once. Fruits boiled in hot water for 5-10 min then applied externally on the back opposite to lungs for 10 min
Cucurbitaceae (MH49)	<i>Ecballium elaterium</i> (L.) A.Rich. ^{d,e}	قنّاء الحمّار	Fruits	Sinusitis; jaundice	Juice of one fruit placed in a cup of water, then one drop from this solution applied in nostrils and inhaled
Cupressaceae (MH50)	<i>Cupressus sempervirens</i> L. ^e	سرو	Fruits	External wounds	Fruits ground as powder then mixed with olive oil until dough formation, then applied externally on wounds
Cupressaceae (MH51)	<i>Cupressus sempervirens</i> L.	سرو	Leaves	Skin allergy	Standard infusion taken orally, 150 ml, 3-4 times/day
Cupressaceae (MH52)	<i>Cupressus sempervirens</i> L.	سرو	Fruits + leaves	Internal and external wounds; ulcers; skin wrinkles	Standard Infusion taken orally, 150 ml, 3-4 times/day
Cupressaceae (MH53)	<i>Cupressus sempervirens</i> L.	سرو	Fruits + resins	Asthma; expectorant; cholesterol	Infusion of 5 fruits in one cup of water taken orally twice a day; oral intake of small quantity (size of a bean) of resins as a gum twice a day
Equisetaceae (MH54)	<i>Equisetum palustre</i> L. ^d	ذيل الحصان	Leaves + shoots	Kidney stones and diseases; iron deficiency	Standard infusion taken orally, 150 ml, 3-4 times/day
Ericaceae (MH55)	<i>Arbutus unedo</i> L. ^d	قنطب	Leaves	Nervousness; rheumatoid arthritis	Infusion of one full hand of plant parts in 1 cup of water taken orally once a day
Euphorbiaceae (MH56)	<i>Ricinus communis</i> L. ^d	خروع	Oil	Laxative; excess hair growth	1 spoon taken orally once in the morning; only 1 teaspoon for children; for excess hair growth, oil applied externally at area of interest
Fabaceae (MH57)	<i>Calycotome villosa</i> (Vahl) Link. ^d	قندول	Flowers	Hair dye	Standard decoction applied externally to the hair
Fabaceae (MH58)	<i>Calycotome villosa</i> L.	قندول	Shoots	Diabetes	Standard infusion taken orally, 150 ml, 3-4 times/day
Fabaceae (MH59)	<i>Ceratonia siliqua</i> L.	خرنوب	Fruits	Laxative	1 spoon of molasses taken orally in the morning when still fasting
Fabaceae (MH60)	<i>Cicer arietinum</i> L. ^e	حمص	Seeds	Sexual weakness; nutritive	1 full hand of seeds soaked in tape-water for 12 hours, then 150 ml of extract drunk with honey 150ml, 2 times a day
Fabaceae (MH61)	<i>Dolichos labia</i> Forsk. ^e	لوبية	Fruits + seeds	Diabetes	Fresh plant parts boiled in water for 5-10 min and taken orally
Fabaceae (MH62)	<i>Glycyrrhiza glabra</i> L. ^e	سوس	Roots	Laxative; ulcers; stomach acidity; diuretic	Standard infusion taken orally, 150 ml, 3-4 times/day

Table 1. (Cont'd.).

Family	Scientific name	Local Arabic name	Plant part used	Medicinal application	Mode of preparation
Fabaceae (MH59)	<i>Lupinus termis</i> L. ^{c,e}	ترمس	Seeds	Diabetes	Ground seeds mixed with equal amount of vaseline and applied externally twice a day for acne. For excess hair growth, hair shaved, then solution applied externally, twice a day
Fabaceae	<i>Lupinus termis</i> L.	ترمس	Seeds	Acne; excess hair growth	Seeds immersed in rose-water then a layer of olive oil added and solution left for 12 hour, then 1 teaspoon taken twice a day
Fabaceae (MH60)	<i>Trigonella foenum-graecum</i> L. ^{d,e}	حبة	Seeds	Laxative	Decoction of 30 g of seeds in 1 l of water for 3 min, taken orally, 150 ml, 3 times/day
Fabaceae	<i>Trigonella foenum-graecum</i> L.	حبة	Seeds	Inflammation; diabetes; anemia; diuretic	Decoction of 30 g of seeds in 1 l of water for 3 min, taken orally, 150 ml, 3 times/day
Fagaceae (MH61)	<i>Quercus coccifera</i> L.	مسنجان	Fruits + bark	Night urination	Decoction of one ground fruit in 200 ml for 15 min drunk once before sleeping
Fagaceae (MH62)	<i>Quercus calliprinos</i> Webb. ^b	بلوط	Bark	Antibiotic; vaginal infections	Decoction of 3 spoons of dried plant material with same amount of rosemary in 1 l of water for 5 min then used as a douche or taken orally, 150 ml once a day
Fagaceae	<i>Quercus calliprinos</i> Webb.	بلوط	Fruits	Anti-diuretic; bedwetting.	Decoction of 2 fruits in 150 ml of water for 5 min, taken orally twice a day
Fabaceae (MH63)	<i>Lens esculenta</i> Moench. ^c	عس	Seeds	Iron deficiency; blood; nervousness	Decoction of 200 g dried seeds in 1 l of water for 15 min, 150 ml taken orally, 3-4 times/day
Fuaceae (MH64)	<i>Fucus vesiculosus</i> L.	فوقس حويصلي	Plant	Thyroid disorders; stopping hunger feeling	Standard infusion taken orally, 150 ml, 3-4 times a day
Geraniaceae (MH65)	<i>Geranium robertianum</i> L. ^d	أبرة الراعي	Leaves	Diabetes	Standard infusion taken orally, 150 ml, 3-4 times/day
Geraniaceae (MH66)	<i>Pelargonium radula</i> (Cav.) L. ^f	عطرة	Leaves + shoots	Diabetes; intestinal cramps	Standard infusion taken orally, 150 ml, 3-4 times/day
Juglandaceae (MH67)	<i>Juglans regia</i> L. ^c	جوز	Fresh green + seed coat	Ulcer; diarrhea; bedwetting	Peels of 4 seeds boiled in 400 ml to become 200ml then 1 teaspoon taken orally once in morning while still fasting
Juglandaceae	<i>Juglans regia</i> L.	جوز	Seeds	Sexual weakness	Seeds of ten fruits taken orally once a day
Juglandaceae	<i>Juglans regia</i> L.	جوز	Leaves	Hair dye	Olive oil added to ground dried leaves to immerse the powder, then stored at 40°C for 15 days; dough applied externally twice a day
Juglandaceae	<i>Juglans regia</i> L.	جوز	Leaves	Hair dye; diarrhea	Standard decoction of leaves applied externally 3 times a day or taken orally twice a day for diarrhea
Lamiaceae (MH68)	<i>Eremostachys laciniata</i> (L.) Burge ^b	حزليل	Leaves	Laxative; sexual weakness; diuretic	Infusion of 5 leaves in 1 l of water, taken orally, 150 ml, 2 times/day
Lamiaceae (MH69)	<i>Lavandula stoechas</i> L. ^{d,e}	خزامي	Flowers	Insomnia; anxiety; disinfectant; uric acid	150 ml of standard infusion taken orally, 3-4 times/day
Lamiaceae (MH70)	<i>Melissa officinalis</i> L. ^{d,e}	مليسه تورنجان	Leaves	Chest pain; expectorant; heart diseases; weight loss; relaxant	150 ml of standard infusion taken orally, 3-4 times/day
Lamiaceae (MH71)	<i>Mentha longifolia</i> (L.) Huds. ^e	نعناع	Leaves	Gall bladder; nutritive; digestive system	150 ml of standard infusion taken orally, 3-4 times/day

Table 1. (Cont'd.).

Family	Scientific name	Local Arabic name	Plant part used	Medicinal application	Mode of preparation
Lamiaceae (MH72)	<i>Mentha microphylla</i> Koch. ^d	نعناع بري	Leaves + shoots	Stomach and intestinal pains; flatulence	150 ml of standard infusion orally; only 1 teaspoon for children
Lamiaceae (MH73)	<i>Micromeria juliana</i> (L.) Benth. ^e	زوقا	Leaves, flowers + shoots	Kidney stones; stomach and chest pains; gall bladder inflammation; laxative; flatulence	150 ml of standard infusion orally; only 1 teaspoon for children
Lamiaceae (MH74)	<i>Micromeria libanotica</i> Boiss. ^{b,e}	زوقا	Leaves, flowers + shoots	Kidney stones; stomach and chest pains; gall bladder inflammation; laxative; flatulence	Standard infusion taken orally, 150 ml, 3-4 times a day
Lamiaceae (MH75)	<i>Ocimum basilicum</i> L. ^{c,e}	حبق	Leaves + shoots	Stomach inflammation; cough	Standard infusion taken orally, 150 ml, 3-4 times in a day
Lamiaceae (MH76)	<i>Origanum majorana</i> L. ^e	مرغوش	Leaves	Stomach and intestinal pains; dizziness; ear infections	Standard infusion taken orally, 150 ml, twice a day; or could be eaten with food
Lamiaceae (MH77)	<i>Origanum syriacum</i> L. ^{b,e}	زعر	Leaves	Cough; whooping cough; disinfectant; influenza; decreasing histamine release	Standard infusion taken orally, 150 ml, 3-4 times a day
Lamiaceae (MH78)	<i>Rosmarinus officinalis</i> L. ^{c,d,e}	اكتيل الجبل	Leaves + shoots	Uterine cramps; cholesterol reduction; memory and brain cells stimulant; anemia; diabetes	Decoction of 50 g dried plant material in 1 l of water for 2 min, 150 ml taken orally, twice a day
Lamiaceae (MH79)	<i>Salvia frutescens</i> Miller	ميربوية	Leaves + shoots	Stomach aches; hair dye; inflammation; anxiety, diabetes	150 ml of standard infusion taken orally, 3-4 times/day
Lamiaceae (MH80)	<i>Libanotica</i> Boiss. and Gaill. ^{b,d,e}	جمدة	Leaves + flowers	Diabetes	150 ml of standard infusion taken orally, once a day
Lamiaceae (MH81)	<i>Teucrium polium</i> L. ^{d,e}	زعر بري	Leaves + shoots	High blood lipids	Infusion of 6 g of plant parts in 150 ml of water taken orally once a day
Lamiaceae (MH82)	<i>Thymus spicata</i> L. ^b	أرد	Seeds	Female hormones regulator; sexual cycle disorders; female infertility	Ground seeds taken orally, 5 mg daily; 20 g of dried seeds soaked in 200 ml of 80% ethanol for 1 month, then taken orally 1 drop/kg body weight/day
Lauraceae (MH83)	<i>Vitex agnus-castus</i> L. ^{d,e}	غلر	Seeds	Hair loss; muscle spasm; bruises	Oil extracted from seeds applied externally
Lauraceae	<i>Laurus nobilis</i> L. ^{d,e}	غلر	Leaves	Anti-calcification; anti-toxins	Infusion of 3 leaves in a cup of water, 1 cup taken orally, 3 times/day for 3 days, then stopped for 3 days and repeated again for 1 month
Liliaceae (MH84)	<i>Urginea maritima</i> (L.) Baker ^{d,e}	بصينة	Bulbs	Eczema; hair loss; heart diseases	Olive oil added to a macerated bulb until dough consistency then applied externally, once a day; standard infusion of the bulb taken orally, 150 ml, 3-4 times/day
Linaceae (MH85)	<i>Linum usitatissimum</i> L. ^{c,e}	كتان	Seeds	Intestinal regulator; diuretic; cholesterol; freckles	Decoction of 1 spoon of dried seeds in 2 cups of water for 15 min, taken orally, once/day

Table 1. (Cont'd.).

Family	Scientific name	Local Arabic name	Plant part used	Medicinal application	Mode of preparation
Malvaceae (MH86)	<i>Alcea setosa</i> Boiss. ^b	خطمية	Flowers	Teeth and gum inflammations; cough; ulcer	Standard infusion taken orally, 150 ml, 3-4 times/day; or standard infusion used in gargling twice/day
Malvaceae (MH87)	<i>Corchorus olerarius</i> L. ^c	ملوخية	Leaves	Laxatives	Cooked with water then taken orally
Malvaceae (MH88)	<i>Hibiscus esculentus</i> L. ^c	بامية	Fruits	Ulcer	Standard decoction taken orally, 150 ml, 3-4 times/day; eaten cooked with food
Malvaceae (MH89)	<i>Mahua sylvestris</i> L. ^{d,e}	خيزرة	Leaves + shoots	Anti-inflammatory; laxative; vaginal and teeth gum inflammations	Standard infusion taken orally, 150 ml, 3-4 times/day; standard infusion used for gargling or as a douche in case of gums and vaginal inflammations, respectively
Malvaceae (MH90)	<i>Tilia</i> sp.	زيتون	Flowers	Asthma; influenza; cough	Standard infusion taken orally, 150 ml, 3-4 times/day.
Moraceae (MH91)	<i>Ficus carica</i> L. ^d	تين	Leaves + fruits	Bleeding; cough; laxative	Infusion of 3 leaves in 1 cup of water taken orally, twice a day; fruits eaten and used as laxative
Musaceae (MH92)	<i>Musa paradisiaca</i> L. ^c	موز	Fruits + peduncles	Skin rashes; cough; hyperthermia	Fruit slices applied externally on skin; standard infusion of peduncles taken orally, 150ml, 3-4 times/day
Musaceae	<i>Musa paradisiaca</i> L.	موز	Peels	Whooping cough	Standard infusion taken orally, 150ml, 3-4 times/day
Musaceae	<i>Musa paradisiaca</i> L.	موز	Fruits	Potassium deficiency	One fresh fruit taken orally, once a day
Myrtaceae (MH93)	<i>Myrtus communis</i> L. ^{d,e}	ريحان	Leaves + shoots	Skin diseases; intertrigo	Plant parts dried in shade then ground; obtained powder applied externally at affected site
Myrtaceae	<i>Myrtus communis</i> L.	ريحان	Leaves + shoots	Stomach ulcers	Standard infusion taken orally, 150ml, 3-4 times a day
Oleaceae (MH94)	<i>Olea europea</i> L. ^{c,e}	زيتون	Fruits	Cholesterol reduction; laxative; intestinal disorders	30- 35 g of olive oil taken orally once a day as laxative
Oleaceae	<i>Olea europea</i> L.	زيتون	Leaves	Diabetes; cholesterol regulation; antiseptic; laxative; intestinal pains	Standard infusion taken orally, 150 ml, 3-4 times a day
Oleaceae	<i>Olea europea</i> L.	زيتون	Leaves	Lice infection	Infusion of 10 leaves in 1 cup of water applied externally, once a day
Oleaceae	<i>Olea europea</i> L.	زيتون	Leaves	Skin fungi	10 leaves boiled in 1 cup of water and reduced to 1/4 of the volume, then applied externally on affected site; or affected body part soaked in extract
Orchidaceae (MH95)	<i>Orchis mascula</i> L.	سحلب	Tubers	Ulcers	Added to vitamin A, zinc, and milk then taken orally.
Oxalidaceae (MH96)	<i>Oxalis pes-caprae</i> L.	حمض	Leaves + stems	Diarrhea	Standard infusion taken orally, 150 ml, 3-4 times/day
Papaveraceae (MH97)	<i>Papaver</i> sp.	شقائق النعمان	Leaves + flowers	Pain relief; cough and expectorant; heart diseases; nervousness;	Standard infusion taken orally, 150 ml, 3-4 times/day
Pinaceae (MH98)	<i>Pinus halepensis</i> Mill. ^e	صنوبر	Resins + fruits	Increasing sperm number; memory stimulant; sexual weakness; nervousness; disinfectant	Resins applied externally to skin to regenerate cells; 10 seeds eaten orally, twice/day

Table 1. (Cont'd.).

Family	Scientific name	Local Arabic name	Plant part used	Medicinal application	Mode of preparation
Plantaginaceae (MH199)	<i>Plantago major</i> L. ^d	لسان الحمل	Leaves + stems	Kidney stones; diuretic; anti-inflammatory	Decoction of 1 plant in 1 l of water for 1 min taken orally, 150 ml, twice/day
Poaceae (MH100)	<i>Agropyron repens</i> (L.) P. de B. ^d	الجيل	Leaves	Diabetes; stomach and intestinal pains	Standard infusion taken orally, 150 ml, 3-4 times/day; excess intake could affect badly the intestines
Poaceae (MH101)	<i>Avena sterilis</i> L.	شوفان	Shoots + flowers	Allergy; kidneys and renal lithiasis; obesity	Standard infusion taken orally, 150 ml, 3-4 times/day
Poaceae (MH102)	<i>Hordeum vulgare</i> L. ^e	شعير	Shoots Seeds	Heart diseases; lithiasis	10 shoots of about 20 cm in length eaten fresh, once a day; 150 ml of standard infusion of seeds for 30 min taken orally, 3-4 times/day
Poaceae (MH103)	<i>Triticum boeoticum</i> Boiss. ^b	قمح	Seeds	Hair loss; skin freckles	Oil extracted from seeds applied externally on skin
Poaceae	<i>Triticum boeoticum</i> Boiss.	قمح	Shoots	Laxative; cholesterol reduction	Juice from shoots (at stage when 20cm in length) taken orally, 1 spoon once before bedtime
Polygonaceae (MH104)	<i>Rheum ribes</i> L. ^{d,e}	روبيص	Roots	Diabetes; liver diseases; hepatitis	200 g soaked in 1 l of water for 12 hours; then 50 ml of solution taken orally, twice/day
Polypodiaceae (MH105)	<i>Polypodium vulgare</i> L.	سرخس حلو	Roots	Back pain	Parts of the roots applied externally on the back for 30min as compresses
Pteridaceae (MH106)	<i>Adiantum capillus-veneris</i> L. ^d	كزبرة البئر	Leaves	Hair loss	Standard infusion applied externally on hair, 2 times/day
Punicaceae (MH107)	<i>Punica granatum</i> L. ^{c,d,e}	رمان	Seeds + fruits	Astringent; stomach ulcers; diarrhea	Decoction of 50g in 150ml of water for 5 min taken orally twice a day
Ranunculaceae (MH108)	<i>Nigella sativa</i> L. ^c	حبية سوداء	Seeds	Boosting of immune system; low blood pressure; epilepsy	7 seeds taken orally; excessive amount causing hypertension
Rosaceae (MH109)	<i>Crataegus oxyacantha</i> L. ^e	زعرور	Leaves + flowers	Cardiovascular diseases; uric acid	Infusion of 6 g of plant parts in 100 ml of water, taken orally, 3 times/day
Rosaceae (MH110)	<i>Cydonia vulgaris</i> Pers. ^c	مفرجل	Fruits	Diarrhea	One fresh fruit taken orally, once a day
Rosaceae (MH111)	<i>Fragaria vesca</i> L. ^c	فريز	Fruits	Cardiovascular diseases and improving circulation	Juice from fruits taken orally, 150 ml, twice daily; fruits also eaten fresh
Rosaceae (MH112)	<i>Poterium spinosum</i> L. ^e	بلان	Seeds + plant	Hemorrhoids	Decoction of 200 g of fresh plant parts in 1 l of water for 20 min using a sitz bath once a day until improvement
Rosaceae (MH113)	<i>Prunus armeniaca</i> L. ^e	مشمش	Fruits + seeds	Laxative; worms	5 fresh fruits consumed twice a day; 10 seeds taken orally while still fasting, once a day
Rosaceae (MH114)	<i>Prunus avium</i> L. ^{c,e}	كرز	Fruits + pedicels	Diuretic; kidney stones	Decoction of 50 g of plant parts in 1 l of water, taken orally, 150 ml, 2 times/day
Rosaceae (MH115)	<i>Prunus domestica</i> L. ^e	خوخ	Fruits	Laxative	Infusion of 2 fruits in 250 ml, then this amount orally taken in two doses, daily
Rosaceae (MH116)	<i>Prunus dulcis</i> Mill. ^e	لوز	Fruits + leaves	Sexual weakness; colon inflammations	10 dried seeds mixed with 1 spoon of honey, then taken orally for sexual weakness; boiled leaves consumed for flatulence and colon problems

Table 1. (Cont'd.).

Family	Scientific name	Local Arabic name	Plant part used	Medicinal application	Mode of preparation
Rosaceae (MH117)	<i>Pyrus malus</i> L. ^c	تفاح	Fruits	Cancer; skin freckles; cholesterol reduction	Slices of fruits conserved for 9 months in a jar, then taken orally, one cup of extract, once a day
Rosaceae (MH118)	<i>Rosa damascena</i> Mill. ^c	ورد الجوري	Flowers	Anemia; hoarseness; depression; laxative	Standard infusion taken orally, 150 ml, 3-4 times/day
Rosaceae (MH119)	<i>Rubus tomentosus</i> Borkh.	عطق	Leaves	Hemorrhoids; hair loss; inflammation; blood vessels	Standard infusion taken orally, 150 ml, 3-4 times/day
Rutaceae (MH120)	<i>Citrus limon</i> L. ^c	ليمون حامض	Fruits	Skin freckles; xerosis	Fruit juice applied externally on skin
Rutaceae (MH121)	<i>Citrus nobilis</i> L. ^{c,e}	ليمون	Fruits	Vitamin C deficiency.	1 fresh fruit consumed once a day
Rutaceae (MH122)	<i>Ruta chalepensis</i> L. ^d	فيجن - مذاب	Seeds	Lice infection	Oil extracted from seeds applied externally
Rutaceae	<i>Ruta chalepensis</i> L.	فيجن - مذاب	Shoots + flowers	Nervousness; tremors; anticoagulant; prostatic hypertrophy	Standard infusion taken orally, 150 ml, 3-4 times/day
Salicaceae (MH123)	<i>Salix alba</i> L. ^{d,e}	صفصاف	Leaves	Anticoagulant; anti-inflammatory	150 ml of standard infusion taken orally, 3-4 times/day. Excessive amounts resulting in stomach ache
Solanaceae (MH124)	<i>Datura stramonium</i> L. ^e	دابورة	Leaves	Asthma	Dried leaves mixed with tobacco leaves, half by half, then smoked; can be done several times/day
Solanaceae (MH125)	<i>Hyoscyamus aureus</i> L. ^{b,d,e}	بنج ذهبي	Leaves + seeds	Nervousness	150 ml of standard infusion taken orally, 3-4 times/day. Poissous at higher doses
Solanaceae (MH126)	<i>Lycium barbarum</i> L. ^b	عرج	Leaves	Hemorrhoids; blood vessels; hair loss; inflammation	Standard infusion taken orally, 150 ml, 3-4 times/day
Urticaceae (MH127)	<i>Urtica dioica</i> L. ^d	قريص	Leaves + shoots	Cancer	Plant parts soaked in 95% ethanol for 40 days and exposed to light; then 5 drops of solution added for each 1 cup of water
Urticaceae	<i>Urtica dioica</i> L.	قريص	Leaves + shoots	Purifier of intestines; back pains; female infertility due to an increase in male hormone; diabetes; hypersensitivity	Eaten fresh as salad; infusion of 6 leaves in 1 cup of water taken orally, twice daily
Vitaceae (MH128)	<i>Vitis vinifera</i> L. ^{c,e}	عنب	Fruits	Sexual weakness	100g of black fruits consumed along with one spoon of honey
Zingiberaceae (MH129)	<i>Curcuma longa</i> L. ^f	كرمه	Fruits, leaves + shoots	Tumors; cardiovascular diseases; hemorrhoids	Juice from plant parts taken orally, 1 spoon, twice/day; juice applied externally in case of hemorrhoids
Zingiberaceae (MH130)	<i>Zingiber officinale</i> Rosc. ^f	زنجبيل	Roots	Expectorant; increasing sperm number; slowing ejaculation; slimming	Standard infusion taken orally, 150ml, 3-4 times/day
Zygophyllaceae (MH131)	<i>Peganum harmala</i> L. ^e	حرمل	Seeds	Headache; sciatica; aching joints; jaundice; back pains	Standard decoction taken orally, 150 ml, 2 times/day

^a Voucher number, ^b Endemic to the Eastern Mediterranean according to Mouterde (1966, 1970, 1983), Post (1932), Tohme and Tohme (2007), ^c Cultivated according to Post (1932) and Tohme and Tohme (2007), ^d Medicinal according to Tohme and Tohme (2007), ^e Medicinal according to Abou-Chara (2004), ^f Imported

Table 2. Age, experience, and education status of Lebanese herbalists.

Province	N	Average age of herbalists	Average years of experience	Education of majority (range ^a)
Greater Beirut	6	49 ± 2.1 (47-53)	26 ± 4.4 (19-31)	Intermediate (E-HS)
Bekaa Valley	9	42 ± 5.8 (35-51)	15.7 ± 3.8 (11-21)	Elementary (E-HS)
Mount Lebanon	4	48 ± 1.9 (46-48)	16 ± 3.7 (11-21)	Intermediate (E-I)
North Lebanon	4	53 ± 7.1 (42-62)	32 ± 3.5 (28-36)	Intermediate (E-HS)
South Lebanon	3	65 ± 8.3 (56-76)	39 ± 2.9 (36-43)	Elementary (E-I)

^a E = Elementary; I = Intermediate; HS = High School

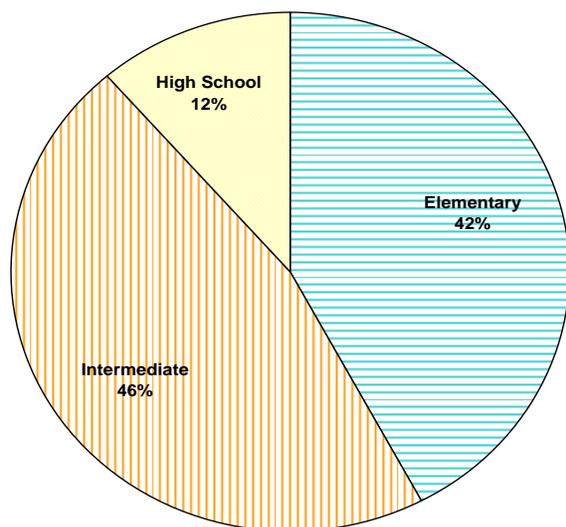


Fig. 1. Educational degrees of the 26 interviewed Lebanese herbalists.

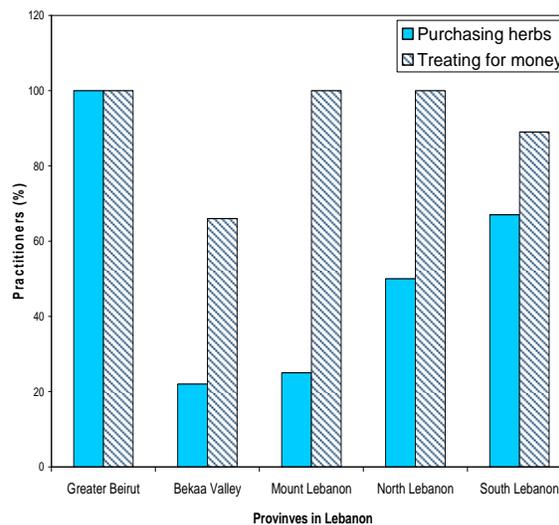


Fig. 2. Percentage practitioners in the different provinces of Lebanon who purchase their plant material instead of collecting it and who treat for money.

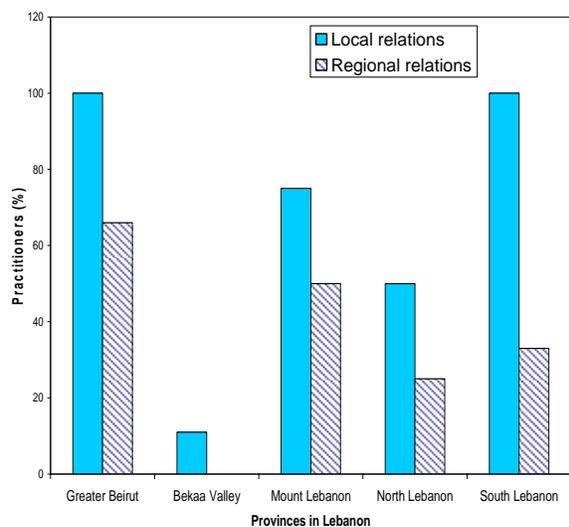


Fig. 3. Percentage practitioners in the different provinces of Lebanon exchanging ethnopharmacological information, locally and regionally.

With respect to the source and the trade of medicinal plants in different provinces of Lebanon, it appears that most of the herbalists do not collect their own plant material but instead purchase it (Fig. 2). In the rural areas, Bekaa Valley and Mount Lebanon, many (50-78%) herbalists collected plants directly from the field, whereas

elsewhere, specially in the cities, they bought most of the herbs from salesmen, mainly from Syria. Herbalists living in the capital, Beirut, relied solely on purchased herbs. With the exception of few herbalists in the Bekaa Valley, the herbalists did not treat any patient for free (Fig. 2).

The survey investigated whether there was exchange of information between herbalists at the local and regional levels. The results obtained showed that all interviewed herbalists in the Greater Beirut and South Lebanon interacted locally with other herbalists as compared to a few (11%) in the interior Bekaa Valley. On the regional scale, the interviewed herbalists in Greater Beirut and Mount Lebanon had moderate (50-66%) communications with other herbalists in the Middle East while those in the other provinces showed very little or no regional exchange (Fig. 3).

Conclusions

A survey conducted on medicinal herbs used by Lebanese herbalists revealed that 128 plant species were used for treating a number of diseases. Most plants were used to treat more than one medical condition. This study showed that the interviewed herbalists do not have proper scientific training and appropriate background in using medical terminologies and in diagnosis. In addition, because they relied on old books describing plants by their common names, and in case of purchased herbs, on plants sometimes collected in neighboring countries and identified

by other dealers, mistakes in plant identification could be done. Therefore, it should be recommended that the use of medicinal plants for the treatment of different diseases be monitored and regulated by an authorized agency in Lebanon, and that all Lebanese herbalists receive some degree of training on classification of medicinal plants, and be licensed. In addition, there is a need to appropriately store the herbs. More importantly, herbalists should be trained on proper herb collection procedures so that certain species that are heavily collected, such as *Salvia* and *Origanum*, do not become endangered.

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